An Energy Efficiency Workshop & Exposition

Kansas City, Missouri

US Department of State

Regional Office - Ft. Lauderdale, Florida

Solar Showcase Project

Outdoor Lighting & Water Heating

Presented by - Jim Wollam

Government Manager

Solar Outdoor Lighting

Presentation Outline

- Intro - Solar Lights Work In Hurricanes
- Overview - Federal Govt Installations
- Background - State Department Project
- Key Points of Project Development
- Steps To Completion
- Benefits Summary
- Points of Contact

SOL Lights Operated All Through Hurricane Andrew

Before Hurricane Andrew
(Facing Northeast)

After Hurricane Andrew
(Facing Northwest)

Flat Panel, low wind profile, not connected to power grid -- provided light to community for two weeks until power restored

Federal Govt Installations

Agencies world-wide have installed SOL solar outdoor lights:

Army	**Navy**	**Air Force**		**Marine Corps**		**NASA**
Natl Guard		**Army Reserves**		**Coast Guard**		**DOE**
TVA		**Justice**		**FAA**		**BLR**
USGS	**Park Service**		**Forest Service**		**GSA**	**HHS**
	EPA		**BLM**		**State**	**Corps of Engineers**
			NOAA			

Federal Applications for Solar Outdoor Lighting

- Streets, Roadways
- Jogging Tracks
- Pathways
- Fuel Stations
- Boat Launches
- Signs - All Sizes
- Obstruction Lights
- HazMat Storage
- Parking Areas
- Perimeter Security
- Memorials
- Playgrounds
- Traffic Beacons
- Airport Beacons
- Remote Buildings
- Ammunition Storage

State Department Ft. Lauderdale Project Background

- Present facility occupied after Hurricane Andrew
- No lights in parking lot presented security concerns
- Tim Arthurs (State Energy Mgr) contracted with Healey Assoc to survey possible solar applications
- SOL complete outdoor lighting analysis
- Healey & Assoc completed water heating analysis
- Both elements combined into one proposal
- Approval based on cost justified facility improvements and a State Dept Solar Showcase
- Showcase project completed in Dec 2000

Project Development - Key Points

- Qualified Engineering firm did initial study, overall project management and follow-up training
- Single vendor with GSA contract completed project
- SOL designed layout, light placement, manufactured equipment and did installation
- Healey & Assoc designed and installed the roof mounted hot water system
- State Dept interfaced with one contractor

Quick and easy steps to pole installation

Auger truck and pole are in position, direct burial pole, pedestal base and anchor bolts not needed

Auger Only The Area Needed

With electric grid powered lights, the entire parking lot would need to be trenched for laying conduit

All Poles Installed In One Day With No Disruption To Parking

Solar Unit Mounted At Top Of Pole

No connection to power grid allows installation to be completed without moving cars in parking lot

Flat Panel Solar Units, Installed On Direct Burial Concrete Pole

This style unit is the same that operated all during Hurricane Andrew

Completed Parking Lot

These 16 solar lights eliminate utility bills, save 16,000 kilowatt hours of electricity per year and avoid the pollution of: 16 tons of Carbon Dioxide,(global warming) 86 kg of Sulfur Dioxide (acid rain), 30 kg of Nitrogen Oxide (acid rain & smog) caused by fossil fuels.

Solar Powered Wall Units Increase Security

Wall unit fitted with energy saving 24 watt fluorescent bulb

Roof mounted solar unit connected by conduit to wall light shown on left

Solar Lights - Components

Parking Lot Lighting System

- 130 watts of solar power each light
- Standard cobrahead light fixture
- 24 watt fluorescent bulb
- Mounted on direct burial concrete pole
- Unit & pole meet all So Florida building codes

Wall Mounted Light System

- 85 watts of solar power
- 24 watt fluorescent bulb
- All metal colored to match building trim

Solar Powered Water Heating
Summary of Key Points

- Eliminated storage tank & stand-by energy losses
- Instant heater microprocessor controlled
- Avoids low temp and possible legionella
- Conserves energy with safety

Solar Water Heater - Components

Solar Collector

- Roof mounted solar panel - 30 gal capacity
- Collector schedule - 22,100 BTU/Day
- Design Basis - thermal conversion technology

Instantaneous Water Heater

- Capacity MBTUH - 47.7
- Microprocessor controlled
- Adds heat only and if required

Showcase Project Summary of Benefits

- Security needs met with solar energy
- Independent light source - operates in Hurricanes
- Entire project procured under GSA Contract
- Cost effective - avoided extensive construction
- No disruption to workplace
- Outdoor lighting & water heating in one project
- Single POC for overall project management
- Completed on time and within budget
- Showcase project-replicable in all Federal Agencies

Points of Contact

Department of State

Tim Arthurs - Washington, DC

202-647-8970 r.tim.arthurs@state.gov

Chuck O'Meara - Ft Lauderdale, FL

954-630-1159 HarryO@state.gov

Healey & Associates

Henry Healey - Merritt Island , FL

321-452-2173 healey@flaenergy.com

Solar Outdoor Lighting

Jim Wollam - Palm City, FL

561-286-9461 jwollam@solarlighting.com